ICHTHYOLOGY.—Chromis atripectoralis, *a new damselfish from the tropical Pacific, closely related to* C. caeruleus, *family Pomacentridae.* Arthur D. Welander and Leonard P. Schultz.

During our studies of some Bikini fishes at the University of Washington, Seattle, we were surprised to observe that the blue-green damselfish, which occurs so abundantly in shallow waters of the reefs throughout the tropical Indo-Pacific faunal area, was a complex of two species. This paper describes one of these as new and presents data for the separation of the two species.

Chromis atripectoralis, n. sp.

Chromis caeruleus (in part), Jordan and Seale, Bull. U. S. Bur. Fish. **25** (1905): 290, pl. 46, ? fig. 1. 1906 (Samoan Islands; color descriptions for specimens numbered 2, 4, and 6, with pectoral axil black appear to be this new species); Montalban, Pomacentridae of the Philippine Islands, Monog. Bur. Sci. Manila, no. 24: 35, pl. 8, fig. 2. 1927 (Philippine Islands).

Heliastes lepidurus Günther, Fische der Südsee, Journ. Mus. Godeffroy **15** (pt. 7): 238 (in part), pl. 128, fig. C.1881.

Holotype.—U.S.N.M. no. 112397, Bikini Atoll, Eman Island, channel reef, July 17, 1947, S-46-405, Schultz, Brock, Hiatt and Myers, standard length 67 mm.

Paratypes.—The following paratypes are from Guam in the Marianas Islands: U.S.N.M. no. 124104, Tumon Bay, July 10, 1945, R. H. Baker, 48 specimens, 9 to 25 mm; U.S.N.M. no. 152557, Tumon Bay, December 10, 1945, L. Gressitt, 2 specimens, 48 mm; U.S.N.M. no. 152558, Tumon Bay, January 8, 1946, Gressitt and Ingram, 35 specimens, 37 to 60 mm.

The following paratypes are from the Marshall Islands: U.S.N.M. no. 141041, Bikini Atoll, Eman Island, July 17, 1947, S-46-405, Schultz, Brock, Hiatt, and Myers, 5 specimens, 61 to 76 mm; U.S.N.M. no. 112395, Rongerik Atoll, Latoback Island, June 28, 1946, S-46-238, Schultz and Herald, 11 specimens, 23 to 44 mm; U.S.N.M. no. 112396, Rongelap Atoll, Naen Island, July 30, 1946, S-46-302, Herald, 33 specimens, 30 to 70 mm; U.S.N.M. no. 141038, Eniwetok Atoll, Aaraanbiru Island, June 3, 1946, S-46-198, Schultz, 8 specimens, 28 to 67 mm; Chicago Nat. Hist. Mus. no. 44703, Bikini Island, August 14, 1946, S-46-349, Herald, 20 specimens, 22 to 65 mm; C.N.H.M. no. 44704, Rongelap Atoll, Eniaetok Island, July 20, 1946, S-46-267, Herald and Brock, 11 specimens, 31.5 to 61 mm; C.N.H.M. no. 44705, Rongerik Atoll, Latoback Island, August 14, 1946, S-1041, Schultz, Brock, and Donaldson, 2 specimens, 31 to 49 mm.

The following paratypes are from the Philippine Islands, collected by the *Albatross:* U.S.N.M. no. 96435, Langao Point, Luzon, June 24, 1909, 1 specimen, 70 mm; U.S.N.M. no. 152552, Little Santa Cruz Island, May 28, 1908, 2 specimens, 69 to 74 mm; U.S.N.M. no. 152551, Dodepo Island, Celebes, November 19, 1909, 1 specimen, 49 mm; U.S.N.M. no. 96455, Tamahu Island, December 12, 1909, 1 specimen, 71 mm; U.S.N.M. no. 96427, Tara Island, December 14, 1908, 2 specimens, 52 and 64 mm; U.S.N.M. no. 152549, Alimango Bay, Burias Island, March 5, 1909, 1 specimen, 63 mm; U.S.N.M. no. 152550, Makyan Island, November 29, 1909, 1 specimen, 69 mm; U.S.N.M. no. 96460, Port Palapag, June 3, 1909, 2 specimens, 61 mm; U.S.N.M. no. 152553 Bubuan Island, Jolo, February 14, 1908, 2 specimens, 47 and 57 mm; U.S.N.M. no. 152548, Langao Point, Luzon, June 24, 1909, 4 specimens, 47 to 66 mm; U.S.N.M. no. 96423, Port Palapag, June 3, 1909, 1 specimen, 49 mm; U.S.N.M. no. 96410, Pararongpang Island, June 11, 1909, 5 specimens, 47 to 65 mm; U.S.N.M. no. 96473, Mactan Island, Cebu, March 25, 1909, 1 specimen, 82 mm; U.S.N.M. no. 96440, Limbones Cove, February 8, 1909, 1 specimen, 49 mm; U.S.N.M. no. 96434, Candaraman Island, January 4, 1909, 1 specimen, 64 mm; U.S.N.M no. 96477, Biri Channel, June 1, 1909, 1 specimen 59 mm; U.S.N.M. no. 96437, Biri Channel, June 1, 1909, 2 specimens, 59 and 61 mm; U.S.N.M. no. 96432, Philippines, 1 specimen, 50 mm; U.S.N.M. no. 96447, Guntao Island, December 20, 1908, 1 specimen, 52 mm; U.S.N.M. no. 96453, Ligpo Point, Belagam Bay, June 18, 1908, 1 specimen, 31 mm; U.S.N.M. no. 96469, Maculabo Island, June 14, 1909, 1 specimen, 48 mm; U.S.N.M. no. 96452, Sabalayan, Mindoro, December 12, 1908, 1 specimen, 47 mm; U.S.N.M. no. 96468, Port Langcan, Palawan Island, April 8, 1909, 1 specimen, 38 mm; U.S.N.M. no. 152547, Candaraman Island, Balabac, June 4, 1909, 1 specimen, 47 mm.

The following paratypes were collected in var

ious localities: U.S.N.M. no. 152554, Fiji Islands, 1 specimen, 37 mm.; U.S.N.M. no. 72715, Java, collected by Bryant-Palmer, 1 specimen; U.S.-N.M. no. 65463, Manga Reva, February 4, 1905, *Albatross*, 26 specimens, 38 to 70 mm; U.S.-N.M. no. 152555, Samoan Islands, Jordan and Kellogg, 5 specimens, 43 to 80 mm; U.S.N.M. no. 152556, Samoan Island, Tutuila Island, Pago Pago Bay, June 2, 1939, 11 specimens, 39 to 59 mm.

The following paratypes were collected by the University of Washington group in the Marshall Islands: Eniwetok Atoll, Rigili Island, July 24, 1948, 1 specimen, 47 mm; Eniwetok Atoll, Rigili Island, August 10, 1949, Welander, 1 specimen, 53 mm; Bikini Atoll, Ion Island, August 7, 1947, 1 specimen, 62 mm; Bikini Atoll, Airy Is'and, August 14, 1947, 1 specimen, 57 mm; Bikini Atoll, Amen Island reef, July 31, 1947, 1 specimen, 77 mm; Bikini Island, August 1, 1946, 5 specimens 60 to 77 mm, Bikini Island, July 24 1947, depth 33 feet, 13 specimens, 36 to 83 mm; Likiep Atoll, Likiep Island, August 22, 1949, 11 specimens, 27 to 52 mm; Rongerik Atoll, Latoback Island, August 16, 1947, 1 specimen, 28 mm.

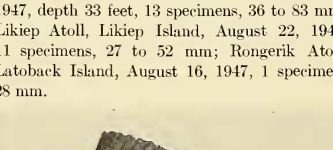

FIG. 1.—*Chromis atripectoralis*, n. sp., a black and white print of a kodachrome picture taken of the holotype at Bikini.

Description.—Dorsal fin rays XII, 9 or 10 (usually 10); anal II, 9 or 10 (usually 10); pectorals ii, 16 to 19 (usually 17 or 18); pelvics I, 5; branched caudal rays 7 + 6; transverse scale rows 24 to 27 from upper edge of gill opening to base of caudal rays; 2 between lateral line and origin of dorsal, 9 between lateral line and origin of anal; dorsal lateral line with 15 or 16 tubular scales; gill rakers on first gill arch, 6 to 9 + 1 + 19 to 22, total 28 to 31.

Depth of body 2.0 to 2.2, length of head 3.1 to 3.6, both in standard length (tip of snout to base of middle caudal rays); snout 3.5 to 4.0, eye 2.8 to 3.3, least preorbital width 7.0 to 8.0, length of upper jaw 2.5 to 2.9, postorbital part of head (hind margin of eye to upper edge of gill opening) 2.2 to 2.5, interorbital width 2.9 to 3.1, least depth of caudal peduncle 2.0 to 2.3, length of pectoral fin 1.2 to 1.3, length of pelvic fin 1.2 to 1.3, length of second dorsal spine 2.0 to 2.3, length of upper caudal rays 0.6 to 1.0, lower 0.7 to 0.9, all in length of head (tip of snout to posterior margin of opercular membrane); depth of caudal peduncle into length of caudal peduncle 1.1 to 1.4; angle of upper profile with lengthwise axis of body 33° to 48°, profile straight to convex.

Teeth of jaws conical, widely spaced, an outer row enlarged teeth, in lower jaw these projecting anteriorly near symphysis, a few teeth at sides near tip of lower jaw curve out posteriorly; inner teeth minute in single row in upper jaws, forming small patches of very minute teeth on either side of symphysis in lower jaw; snout scaled to tip, line from eye, including nostril and along upper edge of preorbital naked; preorbitals and suborbitals scaled, lower margin of latter almost entirely obscured; preopercle produced at angle, its posterior margin entire with some irregular crenulations observable at angle in many specimens; no scales on bases of soft dorsal and anal; upper and lower caudal rays filamentous, 3 free spines on upper and lower caudal base; profile angle, measured with one side of angle lying along closed lower jaw to tip of snout and the other side from snout to nape directly above gill opening, 80° to 96°.

Color in alcohol.—Head and upper half of body bluish gray to brown; lower sides and belly lighter, pale to silvery; a narrow dark to bluish line from eye, just under nostril toward middle of snout along naked area; iris faintly bluish; spiny dorsal membrane more or less dusky, this sometimes accentuated basally and distally, spines dusky; lips, especially at tips of jaws dusky to black; soft dorsal and anal rays dusky, membranes lighter; upper and lower caudal rays brownish, middle rays dusky basally, pale distally; pelvics pale to dusky; pectorals pale except at base where upper rays are dusky to blackish, axil of pectoral with large black blotch, this broadest on dorsal portion and usually not extending to lower rays; in young less than 40 mm in standard length axil of pectoral dusky to black.

Color when alive.—Top of head and back bright bluish green; a narrow blue-green line across upper part of eye to snout and a second line from anterior margin of eye just below nostril to snout; lower half of head, sides of body and belly pure white or grayish white; spiny dorsal smoky pur-

plish; soft dorsal and anal rays dusky, membranes faintly yellowish; upper and lower caudal rays greenish, outer margins blackish, middle rays greenish on scaled portion, yellowish on naked portion, pelvics greyish; pectorals clear hyaline except upper ray dusky.

Remarks.—This new species may be differentiated from *C. caeruleus* on the basis of two striking characters: The black axil of the pectoral fin and by more branched pectoral rays (see table of counts) usually 17 or 18 in *atripectoralis*, whereas *caeruleus* usually has 15 or 16. The pectoral axil of *caeruleus* is pigmented with black dots forming a dusky area only along the dorsal part, thence fading ventrally where no pigment cells occur or only a few, whereas *atripectoralis* has a black axil and the individual black pigment cells are not isolated when viewed under magnification, the outer edge of this black axil sharply contrasts with the pale distal part of the axil. On specimens shorter than about 30 mm. in standard length the axil is not quite as black as in longer specimens. We note that the distal margin of the spiny dorsal fin of *atripectoralis* may have a dusky to blackish line whereas that of *caeruleus* is pale.

Although most of the descriptions in the literature for these blue-green damsel fishes fail to mention the colorations of the pectoral axil, a few do so and show the spiny dorsal fin with a dark margin. We have listed a few such references in the synonymy.

Table 1.—Counts Made on Two Species of Chromis

Species and locality	Number of fin rays															Number of vertical scale rows crossing lateral line				Number of gill rakers on first arch									
	Dorsal			Anal			Pectoral													Above angle			At angle	Below angle					
	XII	9	10	II	9	10	ii	15	16	17	18	19	24	25	26	27	6	7	8	9	1	19	20	21	22	23	24
C. caeruleus:																													
Marshall Islands	18	3	15	18	—	18	42	8	32	2	—	—	—	3	19	8	—	4	7	1	12	—	—	5	6	1	—		
Marianas Islands	—	—	—	—	—	—	22	3	15	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Philippine Islands	—	—	—	—	—	—	16	2	13	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Phoenix and Samoan Islands	6	1	5	6	1	5	3	1	2	—	—	—	—	—	—	—	—	—	5	1	6	—	—	2	2	1	1		
Total	24	4	20	24	1	23	83	14	62	7	—	—	—	3	19	8	—	4	12	2	18	—	—	7	8	2	1		
C. atripectoralis:																													
Marshall Islands	16	1	15	16	1	15	31	—	2	11	21	1	4	10	10	7	1	3	10	1	15	1	4	7	3	—	—		
Marianas Islands	—	—	—	—	—	—	21	—	1	4	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Philippine Islands	—	—	—	—	—	—	16	—	—	8	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Phoenix and Samoan Islands	4	—	4	4	2	2	5	—	—	—	4	1	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—		
Total	20	1	19	20	3	17	73	—	3	23	49	2	4	11	10	8	1	3	10	1	15	1	4	7	3	—	—		

Table 2.—Measurements Recorded for Two Species of Chromis (expressed in thousandths of the standard length)

Measurements	*C. caeruleus* Bikini Atoll			*C. atripectoralis*				
				Bikini Atoll				Guam Paratype
				Paratype	Paratype	Paratype	Holotype	
Standard length in millimeters	30.2	45.0	58.7	31.1	46.1	52.3	67	41.5
Greatest depth of body	464	449	477	462	475	470	455	458
Length of head	301	298	303	309	293	311	314	313
Length of snout	79	84	83	73	76	79	87	80
Diameter of eye	96	96	85	112	93	101	100	113
Least preorbital width	20	24	29	29	24	36	31	31
Length of upper jaw	99	113	114	116	117	122	112	120
Postorbital part of head	129	120	126	119	121	127	136	137
Interorbital width	86	84	99	103	91	105	90	101
Least depth of caudal peduncle	129	122	131	138	143	137	130	142
Length of pectoral fin	242	249	266	270	269	249	251	265
Length of pelvic fin	268	240	267	251	256	281	230	251
Length of third to sixth dorsal spine	162	140	150	132	154	135	149	147
Length of upper caudal rays	331	—	341	—	360	—	298	362
Length of lower caudal rays	331	—	310	338	321	324	403	386
Length of caudal peduncle	145	160	170	170	182	183	221	222

To the recognized *Chromis caeruleus* (Cuvier and Valenciennes) we refer the following named species: *Heliases caeruleus* Cuvier and Valenciennes, Histoire naturelle des poissons **5:** 497. 1830 (New Guinea; Ulea); *H. frenatus*, ibid.: 498 (Guam); *H. lepisurus*, ibid.: 498 (New Guinea). *Heliases frenatus*, Sauvage, Histoire naturelle des poissons **16:** 436, pt. 28, fig. 1. 1887 (Madagascar); *Chromis lepisurus* Bleeker, Atlas Ichthy. **9:** pl. 403, fig. 7. 1877, and Nat. Verh. Holland. Maatsch. Wet. **2** (6): 164. 1877 (East Indies; Zanzibar; Andamans; Guam; Ulea). *Heliastes lepidurus* Günther, Catalogue of the fishes in the British Museum **4:** p. 63, 1862 (Amboina; emended spelling for *H. lepisurus* Cuvier and Valenciennes); Day, Fishes of India **2:** 389, pl. 82, fig. 1. 1877 (Andamans); Günther, Fische der Südsee, Journ. Mus. Godeffroy **15** (pt. 7): 238 (in part), pl. 128, fig. D (only). 1881. *Glyphiodon anabatoides* Day, Proc. Zool. Soc. London 1870: 696. *Glyphisodon bandanensis* Bleeker, Nat. Tijdschr. Ned. Indie **2:** 248. 1851 (Neira, Banda). *Chromis caeruleus* (in part), Jordan and Seale, Bull. U. S. Bur. Fish. **25** (1905): 290. 1906 (Samoan Islands; in a letter to Dr. Jordan, see p. 291, from Dr. Vaillant who examined the types of *caeruleus*, *frenatus* and *lepisurus*, all three are referred to a single species by him); Aoyagi, H., Biogeographica, Trans. Biogeog. Soc. Japan **4** (1): 186, fig. 14. 1941 (Japan).

Remarks.—Fowler and Bean, U. S. Nat. Mus. Bull. 100, **7:** 31, 61. 1928, have proposed the subgenus *Hoplochromis* for *C. caeruleus*, characterized by having the "front edge of lower jaw with 6 short conic teeth flaring outward."

ICHTHYOLOGY.—*A new genus and species of anacanthobatid skate from the Gulf of Mexico.* Henry B. Bigelow and William C. Schroeder.* (Communicated by L. P. Schultz.)

In 1924 von Bonde and Swart[1] proposed a new genus *Anacanthobatis* for *Leiobatis marmoratus* von Bonde and Swart, a curious batoid from the Natal coast; skatelike in that its pelvic fins are so deeply concave outwardly that they are entirely subdivided with the anterior subdivision limblike, but differing from all typical skates in their perfectly naked skins and in lacking dorsal fins. A second new species, *dubia*, agreeing with *marmoratus* in naked skin and in filamentous prolongation of the snout, but differing from it in that the outer margins of the posterior subdivision of its pelvic fins are fused along their anterior one-half with the inner margins of the pectorals, was also referred to *Anacanthobatis* by von Bonde and Swart.[2] But the unique specimen seems to have lost most of its tail, so that the presence or absence of dorsal fins remains to be learned.

Anacanthobatis is included among the Dasyatidae by Barnard,[3] by Fowler,[4] and by Smith.[5] But the nature of its pelvic fins seems to us to place it among the rajoids, as a separate family, Anacanthobatidae, because of its naked skin and lack of dorsal fins.

No batoid resembling *Anacanthobatis* was seen again until the autumn of 1950, when trawlings by the U. S. Fish and Wild Life Service vessel *Oregon* in the northern side of the Gulf of Mexico, off the Mississippi, yielded two specimens that agree with the South African *A. marmoratus* von Bonde and Swart in structure of pelvics, wholly naked skin, and long slender tail without dorsal fins, but with *A. dubia* von Bonde and Swart in the fact that the outer margins of the posterior subdivision of the pelvic fin is fused along the anterior two-thirds with the inner margin of the pectorals, which is not the case in *marmoratus*. But the Gulf of Mexico form differs from both *marmoratus* and *dubius* in that the end of the snout is expanded in leaflike form (Fig. 1).

The marginal fusion of pelvic fins with pectorals now established for two species is so unusual a character as to justify a new genus, for which we propose the name *Springeria*, in recognition of Stewart Spring-

* Contribution no. 554 from the Woods Hole Oceanographic Institution.

[1] Mar. Biol. Surv. South Africa Rep. 3, spec. Rep. 5 [1922]: 18, pl. 23, and accompanying errata slip. 1924.

[2] Loc. cit., p. 19.

[3] Ann. South African Mus. **21:** 79. 1925.

[4] U. S. Nat. Mus. Bull. 100, **13:** 448. 1941.

[5] *Sea fishes of southern Africa*: 71. 1949.